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considered as evolutionary processes, nevertheless it seems to me to be essential to the notion of truth (as more than mere relativity and change in individual experiences, for 'society' does not have experiences) to hold that it is *timeless.* And I can not see what meaning there can be in a *perfect reality* which is in evolution as a whole. Either all is flux and then 'integration' and truth and goodness and beauty are purely relative and shifting, or there must be a real principle which is beyond change. In the latter case our criteria and specific contents of truth, although not necessarily final and complete, may yet have a real validity. It is not necessary that we should know 'the absolute completely in order to have valid knowledge. But if there is nothing more than the relativity and flux of individual experiences, whether taken singly or in sum, there can be no absolute truth or perfection to aim it and I see no meaning in talking about 'reality' at all. It may be our lot to evolve but slowly towards the comprehension and possession of a permanent principle of reality, but unless we can presuppose such a reality as a self-existent end our successive mental acts, whether theoretical or practical, seem devoid of any *inherent* and *final value.* And *now* in the midst of the struggle either *our* evolving, 'integrating' and shifting experiences are the only realities so-called, or else there is implied in the very zest and seriousness of our efforts a reality which is *not* in evolution. Does not the former hypothesis remove the very nerve of the endeavor after the true and the good? I merely raise these questions in order to insist that pragmatism and the functional theory involve problems in regard to reality that can neither be brushed aside as ontological and antiquated or settled off-hand by the evolution method.

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REVIEWS AND ABSTRACTS OF LITERATURE

Educational Psychology. EDWARD L. THORNDIKE. New York, Lemcke and Beuchner, 1903. Pp. 177.

Those who have been used to seeing 'educational psychologies' that contain some extracts of psychology and many infusions of pedagogical maxims and methods will probably be surprised when they open this book. Those, however, who have read the author's 'Notes on Child Study,' will read the book with some sense of familiarity and will realize that it is the same material enlarged, deepened and more definitely organized with reference to scientific methods of investigation and interpretation. It is not a philosophy of education, but the outline of an inductive science which is to be developed by extensive experimental investigations and the application of exact mathematical formulæ.

He first states that educators *must* judge of the amount and kind of changes produced in minds and bodies by the several means used, and shows that it is possible in many cases to substitute exact measurements of such changes for the indefinite and unreliable judgments employed, and illustrates how the 'average,' 'mean,' 'mode' and 'average deviation' of a series of measurements may be calculated. He then illustrates by diagrams how closely the theoretical law of the distribution of traits is approximated by the results of various measurements of mental and physical characteristics, and emphasizes the importance of average deviation being given in order that results may be correctly interpreted.

The problem of the relationship between various mental traits is then outlined, the methods of computing them given and the results of experiments quoted, showing that in many cases the common opinions and theories of the correlation of mental traits are without foundation; *e. g.*, ability in algebra and ability in geometry are only slightly related, while ability in science and ability in English are more closely correlated than ability in Latin and ability in English.

In discussing original and acquired traits the principal facts quoted are from Galton's 'Study of Twins,' and the most startling conclusion is that "The one thing that educational theories of to-day seem to place as the foremost duty of the school—the development of powers and capacities—is the one thing that the schools or any other educational force can do least."

In the following chapter abundant proofs are quoted from Galton, Pearson and others showing that mental traits are inherited, and evidence is given against the theory that acquired traits are inherited in any appreciable degree. The next chapter, in which Rice's experiments in spelling and arithmetic are extensively quoted, attempts to show that the influence of environment is not great. However much this may be doubted, the following statement will be very much appreciated by those beginning to view education from the broader standpoint of biological development. "The work of education is, (1) To supply the needs of the brain's healthy growth and to remove psychological impediments to it; (2) to provide stimuli to desirable mental variations and to withhold stimuli from the undesirable; (3) To make the outcome of desirable activities pleasurable and to inhibit their opposites by discomfort."

The chapter on the influence of special forms of training upon more general abilities is a more complete elaboration of the authors' already published view that special training has no effect on general ability in the sense in which it has been claimed. A brief chapter on the influence of selection effectually shows how interpretations of data are often erroneous because the facts are obtained from selected cases; *e. g.*, arguments for the value of college training lose much of their force when we recollect that college students are a selected class of youths and not representatives of the masses. The influence of selection is also made much of in the chapters on changes in mental traits with age and on sex differences in mental traits, with the result that doubt is thrown on nearly all conclusions of investigators in these lines.

The chapter on exceptional children treats in a very thorough and suggestive way exceptional superiority, exceptional defects, general mental defects, exact measurements of exceptional children, moral defectives, exceptional rates of growth, precocity, slow growth and arrested development, while the succeeding chapter has an equally critical discussion on the relationship of mental and physical traits. The chapter on 'Broader Studies of Human Nature' is in the main a criticism of studies made by the *questionnaire* method, which the author regards with little favor largely because the data are usually unreliable, since the answers frequently involve opinions rather than facts and are often suggested by the questions, while the answers are by selected individuals and frequently in a form not suited to quantitative treatment.

In the last chapter, on the problem of education as a science, it is stated that a theory of education must answer these two questions: 'What ought people to do?' and 'How shall we change them from what they are to what they ought to be?' The first is a matter of ideals, while the second, to which the author devotes his whole attention, is a question of facts. He says: "Since groups of variable facts will be the material it studies, statistics will everywhere be its handmaid. The chief duty of serious students of the theory of education to-day is to form the habit of inductive study and learn the logic of statistics. Long after every statement about mental growth made in this book has been superseded by a truer one the methods which it tries to illustrate will still be profitable and the ideals of honesty in statistical processes by which I hope it has been guided will still be honored."

This quotation is in itself a good characterization of the whole book. It is the work of a genuine scientific educator. Much of it is critical and negative while the positive though tentative conclusions show reactions against current theories. The effect will be to discourage some enthusiastic young students of education and to antagonize older theoretical educators, while those thoroughly imbued with the spirit of scientific investigation will be stimulated to more careful work in this promising but complex field of scientific research.

This book with its hitherto unexampled emphasis of exact measurements in the study of education marks our entrance upon a new epoch in the development of educational theory and practice. It will surely be a powerful influence in checking the loose theorizing and hasty generalizing that have been so common in educational literature, and it will be an important factor in promoting more accurate thinking and painstaking investigations.

On the other hand, Dr. Thorndike seems to expect more from the methods of exact experiment than do many others who are in complete sympathy with the purposes and methods of this book. We already have an almost perfect science of bridge-building founded on exact measurements, but there is scarcely a hope that we shall have even in the distant future such a perfect science of poetry or picture building, and the same is true of mind and character building. Education must be carried on for many years before it can be based to any considerable extent on exact measurements, and such basis may never be supplied in some lines.

In the meantime we must depend upon unscientific investigations and inexact estimates which we should be ready to replace by exact measurements as fast as such data are supplied us. The present writer believes that the large amount of time devoted to the collection and interpretation of educational data by more or less unscientific methods is not wholly wasted. It has prepared the way for the more exact work advocated by Dr. Thorndike and a great deal has been learned by every investigator that can not be expressed in the form of exact measurements. In studying young children especially, more depends upon the tact and insight of the investigator than upon his instruments and methods. Even imperfect data crudely interpreted are also better than antiquated theory mechanically applied, hence the numerous crude studies of children that have been made within the last decade have not been without their value in this transition period. It is to be hoped, however, that Dr. Thorndike's book will result in much less careless work by those who claim to be making scientific investigation of educational problems.

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Kant's Transcendental Idealism and Empirical Realism. I.–II. C. M. WALSH. *Mind,* October, 1903, pp. 454–472, and January, 1904, pp. 54–71.

In the words of the author, "This paper does not advocate the adoption of the transcendental realism rejected by Kant. It attempts merely to show that in rejecting this theory and in setting up his own Kant did not have clear and distinct ideas about the subjects of which he was treating. It attempts to show that Kant was confused in his theory of empirical realism, or conception of an outside phenomenal world, which his critics have generally been willing to accept, as much as in his conception of the things in themselves, which his critics have generally repudiated." (*Mind,* January, 1904, p. 71.) There is no division of the topic corresponding to the two papers, and they leave the reader somewhat confused by the monotony of detail. And there is altogether too much verbal wrangling over 'phenomenon' and 'thing in itself.' But the main contention is forcibly and effectively stated. Kant's doctrine as a whole is neither subjectivistic nor realistic enough to be self-consistent. His refutation of Berkeleyan idealism, and his frequent references to the unity and externality of the natural world, do not agree with his supposition that this world is indispensably conditioned by percipient beings and the formative principles that belong to their nature. The latter is a self-consistent doctrine. We may suppose a thing-in-itself to determine experiences in percipient beings, and to persist as the ground of possible experience where these experiences themselves have lapsed. But in that case, instead of one nature, we have as many natures as percipient beings, with a certain identity of ground and similarity of content. This would be the very 'material idealism' that Kant so strongly disclaimed. Or, as is stated at the opening of the second paper,